E-COMMERCE (CSEN2151)

Module III : Technology Infrastructure For E-commerce

Understand how the Web works, Internet and web features and services support e-commerce, Basic e-commerce applications using the appropriate technology

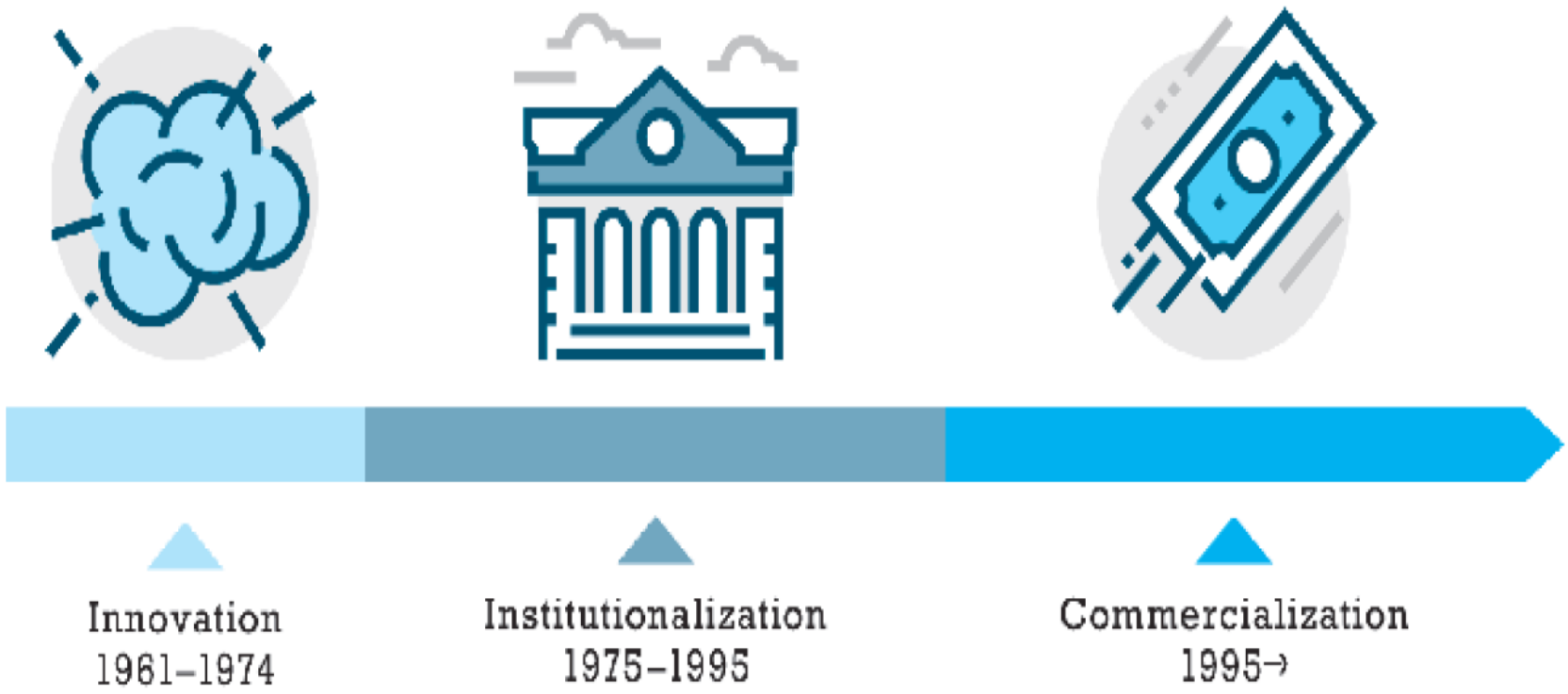
The Internet: Technology Background

- **Internet** is an interconnected network of thousands of computers
- The **Web** is one of the Internet's most popular services
- The Web providing access to billions, perhaps trillions, of web pages
- "hyperlinks" that permit users to jump easily from one page to another.
- Web pages are navigated using web browser software.

Evolution Of The Internet: 1961-the Present

Evolution Of The Internet: 1961–the Present: Internet history can be segmented into three phases		
Innovation Phase	1961 to 1974	fundamental building blocks of the Internet— packet-switching hardware communications protocol called TCP/IP client/server computing
Institutionalization Phase	1975 to 1995	Internet had been proven in several government-supported projects
Commercialization Phase	1995 to the present	encouraged private corporations to take over and expand the Internet

FIGURE 3.1 STAGES IN THE DEVELOPMENT OF THE INTERNET



The Internet has developed in three stages from 1961 to the present. In the Innovation stage, basic ideas and technologies were developed; in the Institutionalization stage, these ideas were brought to life; in the Commercialization stage, once the ideas and technologies had been proven, private companies brought the Internet to millions of people worldwide.

World Wide Web

- Without Web → no e-commerce
- Internet was born in the 1960s
- Web was invented by **Dr. Tim Berners-Lee. ->** British scientist
- Web -> 1989 -> while working at CERN
- CERN : European Council for Nuclear Research-> is the world's largest **particle physics laboratory**
- Web was developed to meet the demand for automated information-sharing between scientists in universities and institutes around the world.

Basic idea of the WWW

- The World Wide Web also termed as global heterogeneous information repository
- Allows people to share and reuse high volumes of information.
- The evolution of web categorized into three stages are Web 1.0, Web 2.0 and Web 3.
- Information retrieval (IR) is defined as the process of finding desired information from large document set based on user input query.
- Web information retrieval performs search globally from the largest collection of documents that are linked via network.

Basic idea of the WWW

- Web IR system is successful because of the advent of search engine through which information is easily accessible.
- Search engines are the most popular Web IR tools.
- The search engine is a web software program that searches for desired information across World Wide Web.
- SUI provides an interface for the user.
- Search engine result page (SERP) displays the ranked list of results retrieved by the search engine.

Essential Components of the Web

Berners-Lee developed the initial versions of Web.

- HTML
- HTTP
- web server
- Browser

The Web

- First, Berners-Lee wrote a computer program that allowed pages to be linked using keywords (hyperlinks).
- Clicking on a keyword in a document would immediately move him to another document.
- Berners-Lee created the pages using a modified version of a powerful text markup language called Standard Generalized Markup Language (SGML).
- Berners-Lee called this language HyperText Markup Language, or HTML.
- He then came up with the idea of storing his HTML pages on the Internet.
- Remote client computers could access these pages by using HTTP

Information shared on the Web remained text-based until 1993		
Andreessen and Jim Clark	1994	first commercial browser, Netscape Navigator
Marc Andreessen at University of Illinois	Mosaic was a software program run on any graphically based interface	created a GUI based web browser called Mosaic. view documents on the Web graphically—using colored backgrounds, images
Microsoft Corporation	1995	released its own free version of a browser, called Internet Explorer.
Web pages can be accessed through the Internet host server using the HTTP protocol.		
Hypertext provides a way of formatting pages	(objects such as sound, video, or animation files.)	connect documents to one another with embedded links

Hypertext Example

- when you type a web address in your browser such as

  http://www.sec.gov

- browser sends an HTTP request to the sec.gov server
- It request the home page of sec.gov.

HTTP	first set of letters at the start of every web address
HTTP	followed by the domain name
domain name	specifies organization's server address
domain name	same or closely related to their official corporate name
directory path and document name	help the browser track down the requested page.
URL tells it exactly where to look for the information	

URL Example

http://www.megacorp.com/content/features/082602.html

- http = the protocol used to display web pages
- www.megacorp.com = domain name
- content/features = the directory path that identifies where on the domain web server the page is stored
- 082602.html = the document name and its format (an HTML page)

TABLE 3.11 EXAMPLES OF TOP-LEVEL DOMAINS

GENERAL TOP-LEVEL DOMAIN (GTLD)	YEAR(S) INTRODUCED	PURPOSE	SPONSOR/OPERATOR
.com	1980s	Unrestricted (but intended for commercial registrants)	VeriSign
.edu	1980s	U.S. educational institutions	Educause
.gov	1980s	U.S. government	U.S. General Services Administration
.mil	1980s	U.S. military	U.S. Department of Defense Network Information Center
.net	1980s	Unrestricted (but originally intended for network providers, etc.)	VeriSign
.org	1980s	Unrestricted (but intended for organizations that do not fit elsewhere)	Public Interest Registry (was operated by VeriSign until December 31, 2002)
.int	1998	Organizations established by international treaties between governments	Internet Assigned Numbers Authority (IANA)
.aero	2001	Air-transport industry	Societé Internationale de Telecommunications Aeronautiques SC (SITA)
.biz	2001	Businesses	NeuLevel
.coop	2001	Cooperatives	DotCooperation LLC
.info	2001	Unrestricted use	Afilias LLC
.museum	2001	Museums	Museum Domain Name Association (MuseDoma)
.name	2001	For registration by individuals	Global Name Registry Ltd.
.pro	2002	Accountants, lawyers, physicians, and other professionals	RegistryPro Ltd
.jobs	2005	Job search	Employ Media LLC
.travel	2005	Travel search	Tralliance Corporation
.mobi	2005	Websites specifically designed for mobile phones	mTLD Top Level Domain, Ltd.
.cat	2005	Individuals, organizations, and companies that promote the Catalan language and culture	Fundació puntCAT
.asia	2006	Regional domain for companies, organizations, and individuals based in Asia	DotAsia Organization

Domain Names

- general top-level domains, or **gTLDs** sanctioned by **ICANN** currently available and officially
- Countries also have domain names, such as .uk, .au, and .fr (United Kingdom, Australia, and France, respectively).
- In 2011, ICANN removed nearly all restrictions on domain names, thereby greatly expanding the number of different domain names available.

What is HTML?

- HTML stands for Hyper Text Markup Language
- HTML is the standard markup language for creating Web pages
- HTML describes the structure of a Web page
- HTML consists of a series of elements
- HTML elements tell the browser how to display the content

HyperText Markup Language (HTML)

- **HyperText Markup Language (HTML)** is a GML that is relatively easy to use.
- HTML provides web page designers with a fixed set of markup "tags" that are used to format a web page.

A Simple HTML Document

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>My First Heading</h1>
<p>My first paragraph.</p>

</body>
</html>
```

What is an HTML Element?

- An HTML element is defined by a start tag, some content, and an end tag:

< Start tagname> Content goes here... </ End tagname>

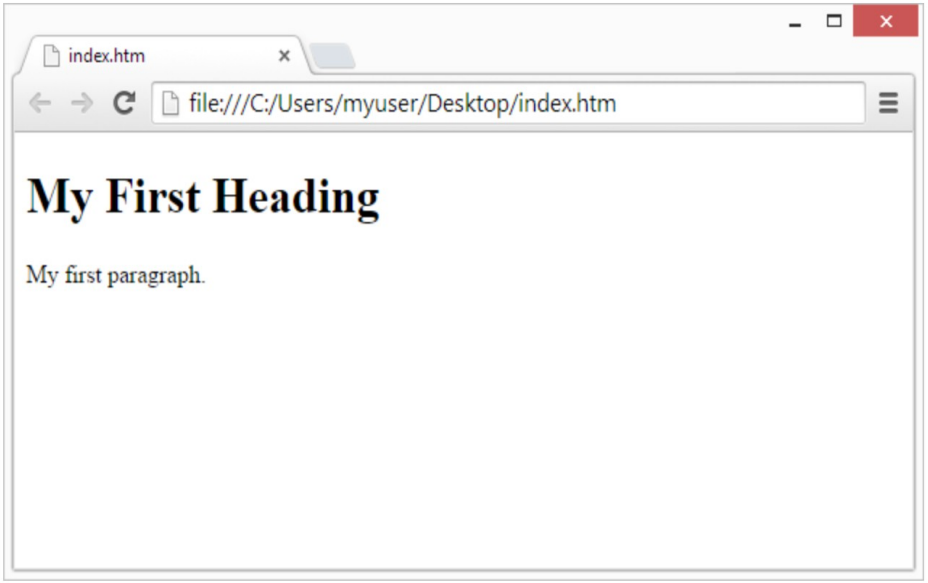
- The HTML **element** is everything from the start tag to the end tag

```
<h1>My First Heading</h1>
<p>My first paragraph.</p>
```

What is an HTML Element?

Start tag	Element content	End tag
<h1>	My First Heading	</h1>
	My first paragraph.	
 	none	*none*

```
<h1>My First Heading</h1>
<p>My first paragraph.</p>
```



Below is a visualization of an HTML page structure:

```
<html>
  <head>
    <title>Page title</title>
  </head>
  <body>
    <h1>This is a heading</h1>
    <p>This is a paragraph.</p>
    <p>This is another paragraph.</p>
  </body>
</html>
```

```
<html>
 <head>
        <h1 style="text-align:center"> HTML <h1>
        <h2 style="background-color:red"> TAGS <h2>
        <h3 style="color:red"> TAGS <h3>
 </head>
 <body>
   <h1>Hello World<h1>
   <h2>Hello World<h2>
   <h3>Hello World<h3>
   <h4>Hello World<h4>
   <h5>Hello World<h5>
   <b><h1> "E-Commerce" <h1></b>
   <p style="text-align:right"> Hi everyone this is e-commerce class. We are in module 3. We are learning HTML Tags. It is a useful markup language for designing web pages </p>
   <p style="text-align:center"> Hi everyone this is e-commerce class. We are in module 3. We are learning HTML Tags. It is a useful markup language for designing web pages </p>
   <p style="text-align:left"> Hi everyone this is e-commerce class. We are in module 3. We are learning HTML Tags. It is a useful markup language for designing web pages </p>

   <h1>The img element</h1>

   <img src="img_girl.jpg" alt="Girl in a jacket" width="500" height="600">
 </body>
</html>
```

HTML

TAGS

TAGS

Hello World

Hello World

Hello World

Hello World

Hello World

"E-Commerce"

Hi everyone this is e-commerce class. We are in module 3. We are learning HTML Tags. It is a useful markup language for designing web pages

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Hi everyone this is e-commerce class. We are in module 3. We are learning HTML Tags. It is a useful markup language for designing web pages

The img element

HTML

- HTML defines the structure of a document
- HTML is used in conjunction with **Cascading Style Sheets (CSS)**
- CSS provides the style.
- HTML web pages can be created with any text editor, such as Notepad or WordPad, using Microsoft Word
- web page development tools such as Microsoft Visual Studio or Adobe Dreamweaver CC.
- most recent version of HTML is **HTML5**.
- HTML5 has become the web page development standard

eXtensible Markup Language (XML)

- XML is a markup language specification developed by the W3C
- It is similar to HTML
- It has a very different purpose.
- purpose of HTML is to control the "look and feel"
- XML is designed to describe data and information.
- Really Simple Syndication (RSS): program that allows users to have digital content, including text, articles, blogs, and podcast audio files, automatically sent to their computers over the Internet

FIGURE 3.15 A SIMPLE XML DOCUMENT

```
<?xml version="1.0"?>
<note>
<to>George</to>
<from>Carol</from>
<heading>Just a Reminder</heading>
<body>Don't forget to order the groceries from FreshDirect!</body>
</note>
```

The tags in this simple XML document, such as <note>, <to>, and <from>, are used to describe data and information, rather than the look and feel of the document.

eXtensible Markup Language (XML)

- The first line : defines the XML version of the document.
- document conforms to the 1.0 specification of XML.
- first element of the document: (the root element): <note>.
- four child elements of the root (to, from, heading, and body).
- The last line defines the end of the root element.

Web Servers

- Server controls peripheral devices
- Server is a computer
- It is attached to a network that stores files
- It interfaces with the outside world—through Internet
- It does some processing for other computers on the network.

Web Servers

- The term refer to the physical computer that runs web server software.
- Leading manufacturers of web server computers include Lenovo,Dell, and HP

Some additional basic capabilities provided by web servers

- Security services
- File transfer
- Search engine
- Data capture

Web Server Software

- **Web server software** enables a computer to deliver web pages written in HTML to client computers on a network
- It request this service by sending an HTTP request.
- Apache, most commonly used type of web server software
- Apache, works with Linux and Unix operating systems

Types of specialized Web servers

- **Database servers** that access specific information within a database
- **Ad servers** that deliver targeted ads
- **Mail servers** that provide e-mail messages
- **Media servers** that enable streaming and other types of media to be delivered.
- small e-commerce site, all of these software packages run on a single computer with a single processor.
- At a **large corporate site,** there may be hundreds or thousands of discrete server computers, many with multiple processors

Web Client

- It is a computing device attached to the Internet
- It is capable of making HTTP requests and displaying HTML pages.
- web client can be any device
- web client is capable of sending and receiving information from a web server.

Web Browsers

1. Google's Chrome
2. Mozilla Firefox
3. Internet Explorer
4. Apple's Safari
5. Microsoft's Edge

Google's Chrome Web Browsers

- A **web browser** is a software program
- Its primary purpose is to display web pages.
- Google's Chrome is leading U.S. desktop web browser
- It has 69% of the market as of June 2020.
- Chrome is also the leading mobile/tablet browser
- mobile/tablet browser with about a 64% share of that market.

Mozilla Firefox Web Browsers

- It is **in second place** in the desktop browser marketplace
- It has 8% share in desktop browser marketplace
- Firefox's share of the mobile/tablet market is very small, less than 1%.
- Mozilla Firefox First released in 2004
- Firefox is a free, open source web browser
- It is small and fast
- It offers many features such as pop-up blocking
- It offers tabbed browsing.

Internet Explorer Web Browsers

- It is in fourth place
- Internet Explorer has 6% share.
- Internet Explorer 11, initially released in 2013
- It is the final version of Internet Explorer that Microsoft supports.

Apple's Safari Web Browsers

- It has only about a 4% share of the desktop browser market
- Apple's Safari browser is the second most popular mobile/tablet browser
- Apple's Safari browser has a 27% share in mobile/tablet browser
- Apple's Safari browser is used on iPhones and iPads

Microsoft's Edge Web Browsers

- It is released in 2015
- It is bundled with its Windows 10 operating system
- It has 7% share of the desktop browser market.

Browser	Released Year	desktop browser market		mobile/tablet browser
Mozilla Firefox	2004	second place 8% share	small and fast . It offers pop-up blocking tabbed browsing	1%
Microsoft's Edge browser	2015	7% share	bundled with its Windows 10 operating system	
Internet Explorer	Internet Explorer 11 is released in 2013	fourth place 6% share	Microsoft supports.	
Apple's Safari browser		4%	It offers pop-up blocking tabbed browsing. used on iPhones and iPads	27% second most popular

The Internet And The Web Features And Services:
Communication Tools

- Internet and Web provide a number of communication tools
- It enable people around the globe to communicate with one another

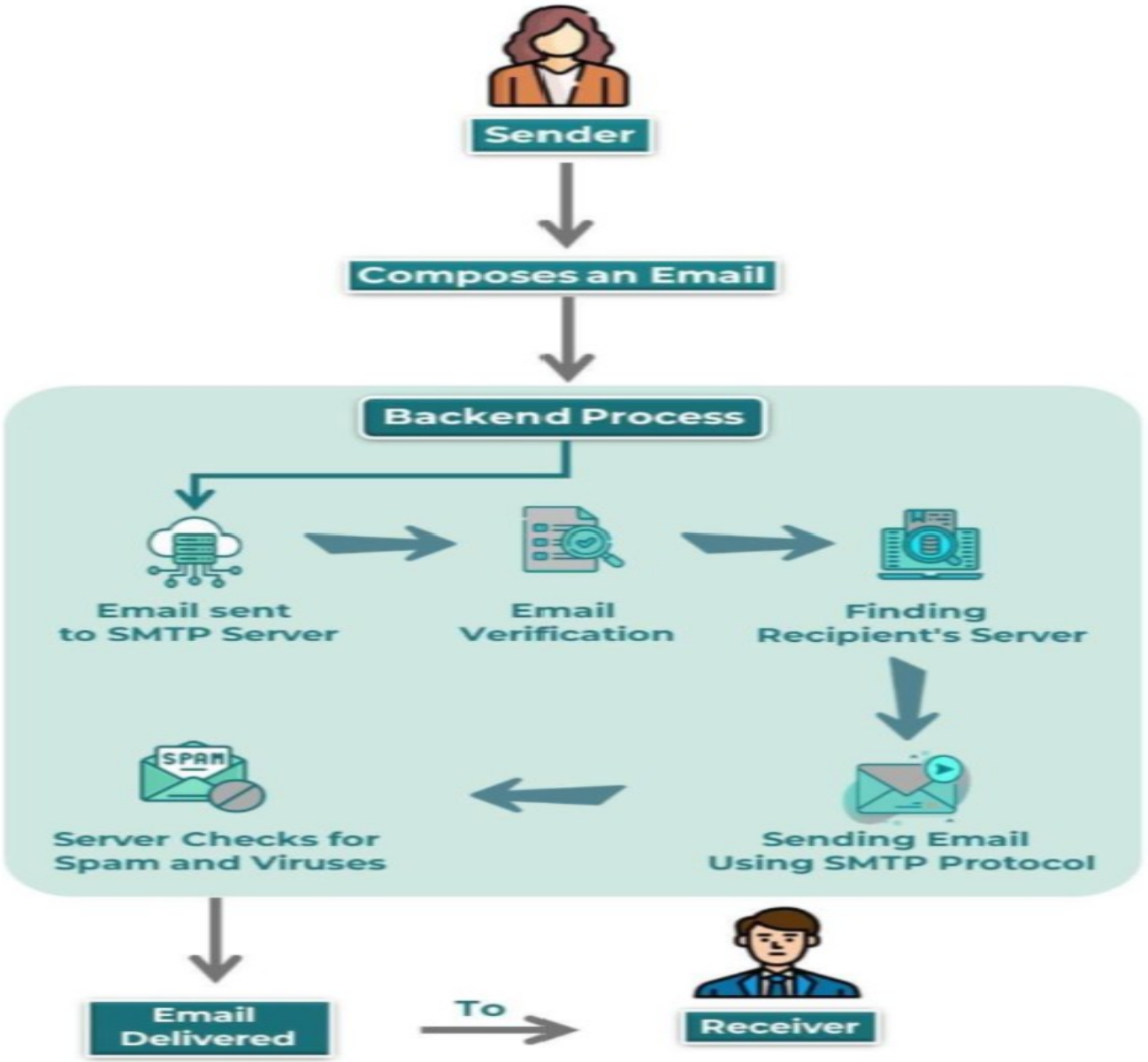
Communication tools include :

1. E-mail
2. Messaging Applications
3. Online Message Boards (Forums)
4. Internet Telephony Applications
5. Video Conferencing
6. Video Chatting
7. Telepresence.

Communication Tools : E-mail

- **electronic mail**, or **e-mail**, has been the most-used application of the Internet.
- E-mail enable messages containing text, images, sound, and video clips to be transferred from one Internet user to another.
- It has more flexibility and speed
- It is most popular form of business communication.
- e-mail also allows **attachments**
- **attachments** can be documents, images, sounds, or video clips

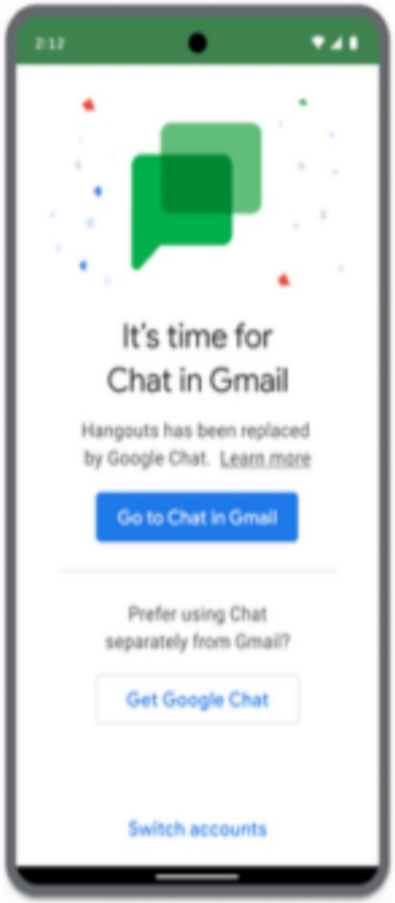
Communication Tools : E-mail

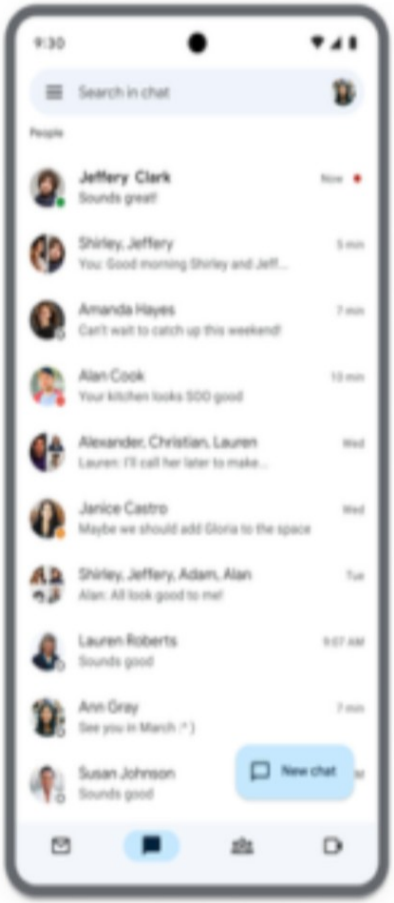


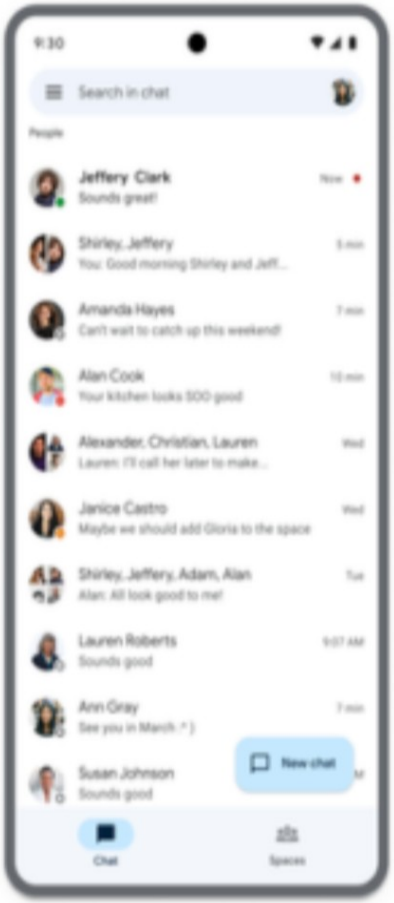
Communication Tools : Messaging Applications: **Instant messaging (IM)**

- It allows you to send messages in real time
- IM displays text entered almost instantaneously.
- E-mail, has a time lag of several seconds to minutes between when messages are sent and received
- Recipients can then respond immediately to the sender
- It is more like a live conversation than is possible through e-mail.
- IM over the Internet competes with cell phone Short Message Service (SMS) and Multimedia Messaging Service (MMS) texting.
- Major IM systems include **Skype and Google Hangouts.**

Communication Tools : Google Hangouts


It's time for
Chat in Gmail
Hangouts has been replaced by Google Chat. Learn more
Go to Chat in Gmail
Prefer using Chat separately from Gmail?
Get Google Chat
Switch accounts



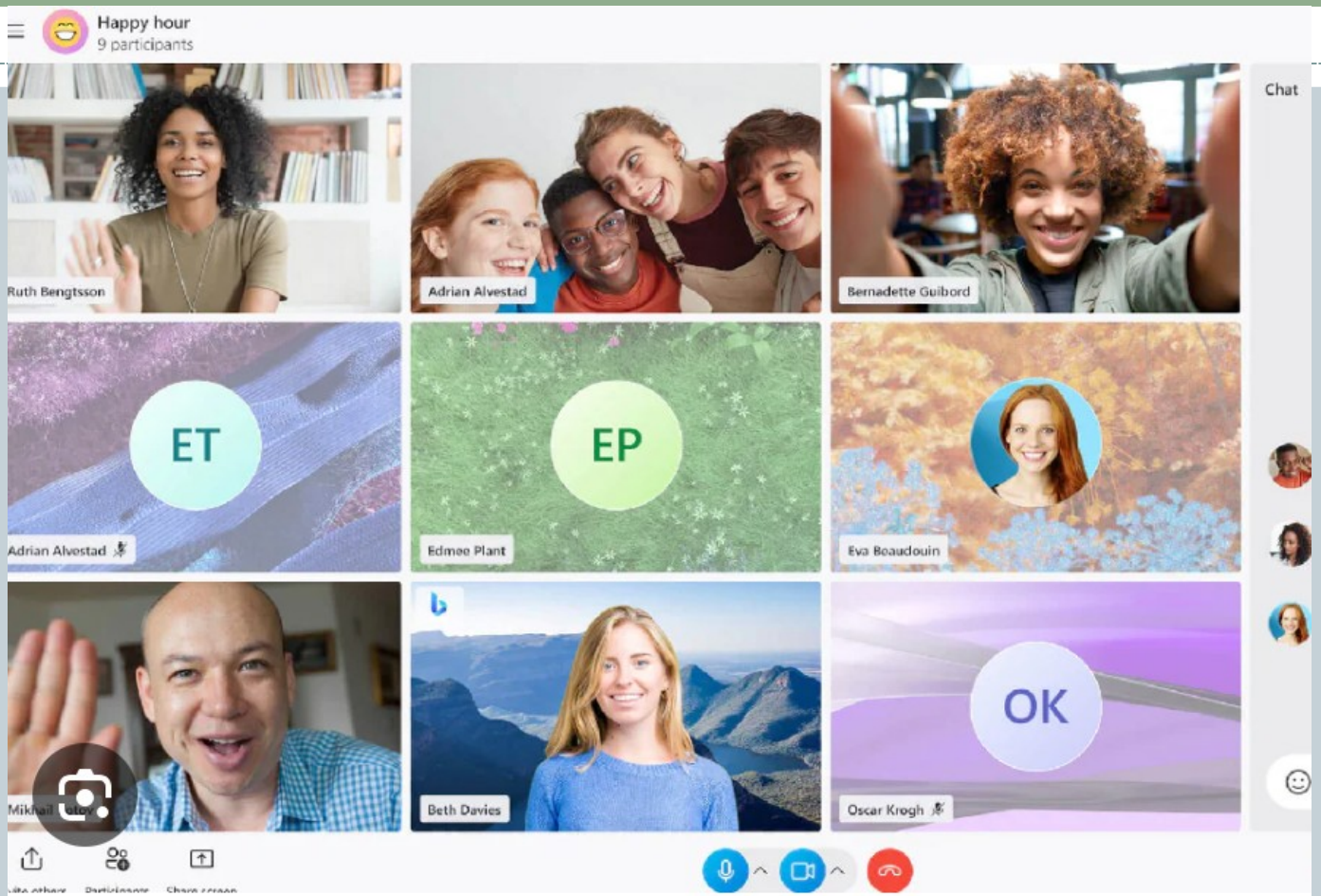


Hangouts

Gmail

Chat

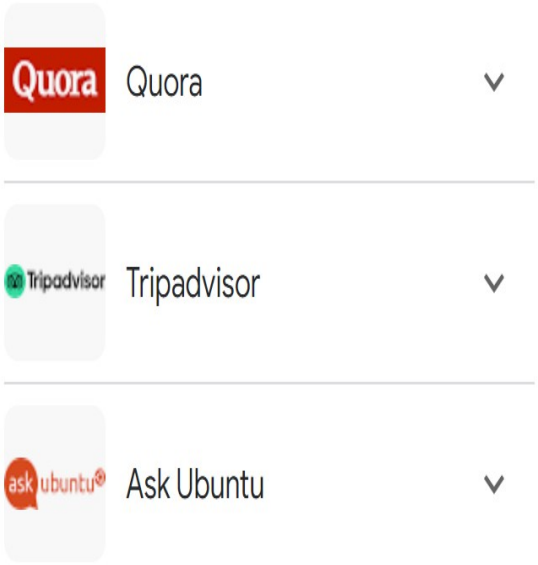
Communication Tools : **Skype**

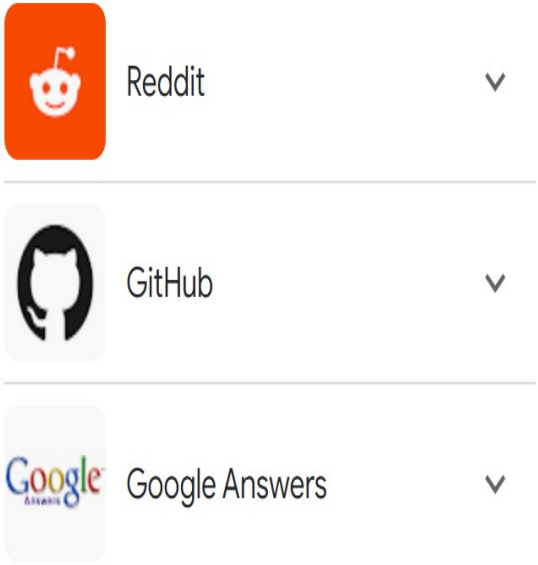


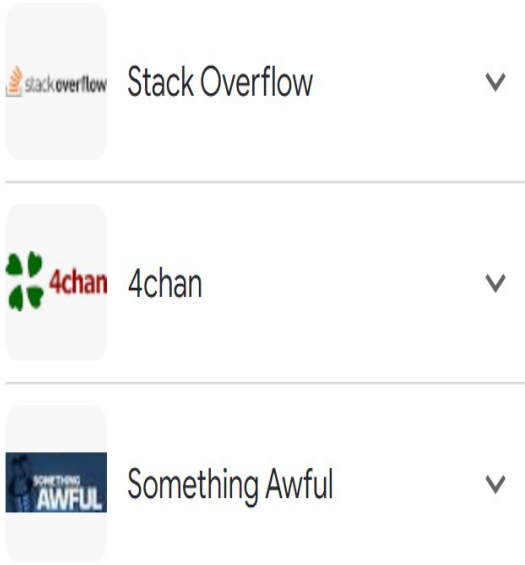
Skype Getting Colourful Redesign, Performance Upgrades, More New Features | Technology News

Communication Tools :Online Message Boards

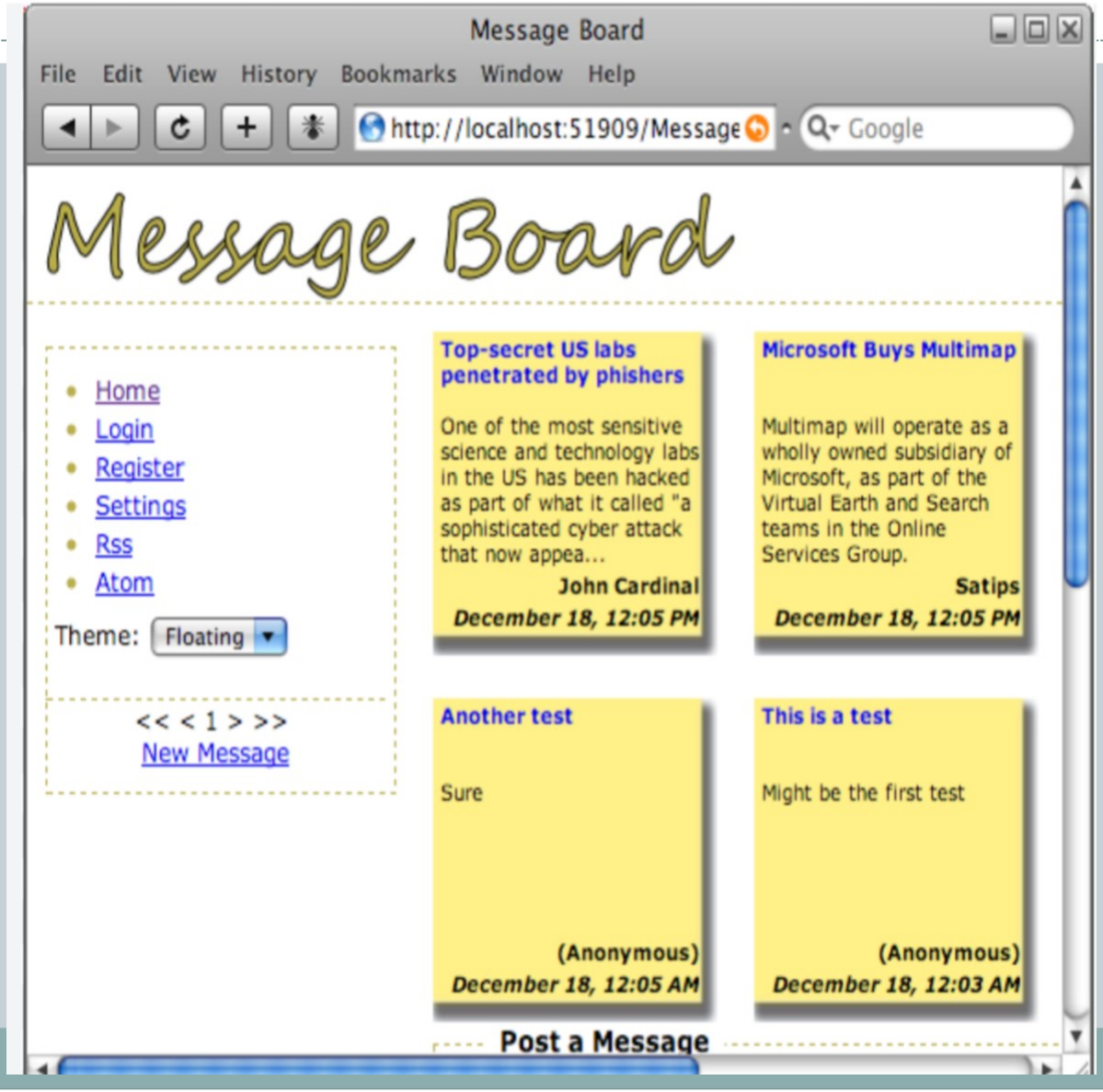
- An **online message board is** also referred to as a **forum,** bulletin board, discussion board, discussion group
- It is a web application
- It enables Internet users to communicate with each other, although not in real time.







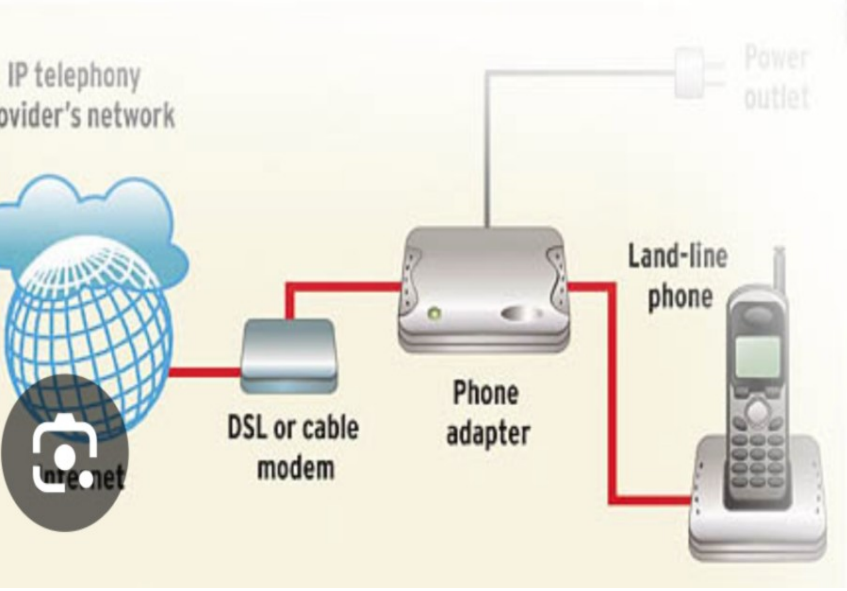
Communication Tools :Online Message Boards



Communication Tools : **Internet Telephony**

- **IP telephony** is a general term for the technologies that use **Voice over Internet Protocol (VoIP)**
- Internet's packet-switched network to transmit voice, and other forms of audio communication over the Internet.
- VoIP can be used over a traditional handset as well as over a mobile device.
- Mobile messaging apps that now also provide free VoIP services, such as

Skype
Facebook Messenger
WhatsApp
Viber (owned by Japanese giant)
WeChat
Line
KakaoTalk



Internet Telephony

Communication Tools : **Video Conferencing**

- It is accessible to anyone with a broadband Internet connection and a web camera (webcam).

Popular **videoconferencing tools** for businesses include:

- Zoom
- Webex (owned by Cisco)
- Microsoft Teams
- Google Hangouts
- GoToMeeting
- FUSE
- **Slack,** a cloud-based team collaboration tool.

Communication Tools : **Video Chatting**

There are a number of web-based video chatting options geared more toward consumer use

- Apple's FaceTime
- Facebook's Messenger
- Microsoft's Skype
- Google Hangouts Chat
- Houseparty

OpenView Education
TRAINING THROUGH THEATRE

HOUSEPARTY
WHAT YOU NEED TO KNOW

WHAT IS IT?

A social media app, allowing users to live video chat with 2-8 people at the same time. Users can also text friends and play games on the app.

WHAT IS THE AGE RATING?

According to Houseparty's terms and conditions, users of the app need to be:

13+

WHAT DOES IT HAVE PERMISSION FOR?

Asks for access to camera, microphone and location. Also asks for access to phone/social media contacts.

WHAT ARE THE RISKS?

UNMODERATED CHATS

All chats are live, so it can be easy to come across inappropriate language and bullying behaviour.

SCREENSHOTS

Users can screenshot content and share this on other social media platforms.

STRANGER CONTACT

"Friends of friends" can be added to chats.

INAPPROPRIATE CONTENT

All content is user generated. You can't control how other users behave.

WHAT CAN YOU DO?

LOCK THE PARTY

Make chats private so other users are unable to join.

SET EXPECTATIONS

Talk about appropriate behaviour and safety before the app is used.

Communication Tools : **Telepresence**

- It creates an **environment** in a room using multiple cameras and screens, which surround the users.
- The experience is strange at first because as you look at the people in the screens, they are looking directly at you.
- Providers of telepresence software and hardware include Cisco, LifeSize, BlueJeans Network and Polycom

Remote presence :

Telepresence refers to a set of technologies which allow a person to feel as if they were present, to give the appearance or effect of being present via telerobotics, at a place other than their true location. Wikipedia

Search Engines

- Google, Yahoo, and Bing are the top most popular web search engines.
- The data retrieval in the traditional search system is focused on 'page ranking' techniques
- The drawbacks of traditional search system are low web information space coverage and poor in deeper web crawling.

Search Engines

- Web IR system is successful because of the advent of search engine through which information is easily accessible.
- Search engines are the most popular Web IR tools.
- The search engine is a web software program that searches for desired information across World Wide Web.
- SUI provides an interface for the user.
- Search engine result page (SERP) displays the ranked list of results retrieved by the search engine.
- Search engines identify web pages that appear to match keywords provide a list of the best matches (search results).

Search Engines

- There are hundreds of different search engines
- top three providers: **Google, Microsoft's Bing,** and Verizon Media's Yahoo.
- In 1998, Larry Page and Sergey Brin, released their first version of the Google search engine.
- search engine collected keywords from sites
- search engine calculated what other sites linked to each page.
- He patented the idea of a web page ranking system (PageRank System)
- It measures the popularity of the web page.

Downloadable Media

- When you **download** a file from the Web
- file is transferred from a web server and is stored on your computer for later use.
- low-bandwidth connections -> audio and video files were difficult to download
- Huge growth in broadband connections, these files today constitute the majority of web traffic.

Streaming media

- **Streaming media** is an alternative to downloaded media
- Enables video, music, and other large-bandwidth files to be sent to a user in a variety of ways that enable the user to play the files as they are being delivered.

Streaming lets you watch shows online without having to wait to download an entire file.

Streaming media & PodCast

- A **podcast** is an audio presentation
- It is a radio show
- stored online as a digital media file.
- Listeners can download the file and play it on their mobile devices
- Streamed files are "played" by a software program such as

Microsoft Windows Media

Apple QuickTime

RealNetworks

Netflix

Amazon Prime Video

YouTube

Hulu

Facebook

Web 1.0 on early internet usage

- Web 1.0 lasted from 1989 to 2005.
- Tim Berners-Lee, created Web 1.0
- Web 1.0 was "read-only."
- Users could exchange information
- Users cannot interact with websites.
- The web played a passive role.
- core web protocols like HTML, HTTP, and URI to deliver static web pages.

Web 1.0 on early internet usage

Jerry and Dave's WWW Interface... *(Always Under construction)*

Welcome, visitor from

Last modified on Fri May 20 17:55:16 1994
*There are currently **1909** entries in the hotlist database*

Vous pouvez lancer des recherches dans cet index. Pour cela, entrez des mots clés de recherche :

- Art
- Computers
- Economy
- Education
- Entertainment
- Environment and Nature
- Events
- Geography
- Government
- Health
- Humanities
- Journalism
- Law
- News
- Politics
- Reference
- Research
- Science
- Society and Culture
- todo

Web 2.0: The Social Web

- Web 2.0, also known as the social web
- Emerged in the early 2000s
- It represents a significant shift
- Social networking sites like Facebook allowed users to connect with friends
- Social networking sites share updates, photos, links, and videos.

Examples of Web 2.0 websites

- Social networks: Facebook, Myspace, Twitter, LinkedIn
- Blogs: WordPress, Blogger, Medium
- Wikis: Wikipedia
- Video sharing: YouTube
- Podcasts: SoundCloud
- E-commerce: Etsy, eBay

Web 2.0: The Social Web

Web 2.0 Applications And Services: Online Social Networks

- They are services that support communication within networks of friends
- people with similar interests, colleagues
- Facebook is the largest social networks worldwide in 2020 -> 2.7 billion monthly users
- Instagram owned by Facebook -> 1 billion members
- LinkedIn -> more than 705 million members
- Twitter-> around 185 million daily active users
- Pinterest -> over 415 million users
- These networks emphasize sharing of content.
- All these features require significant broadband Internet

Web 2.0 Applications And Services: Blogs

- A **blog** (originally called a **weblog**)
- It is a personal web page
- It contains a series of chronological entries (newest to oldest) by its author
- The blog may include a blogroll (a collection of links to other blogs)
- Most blogs allow readers to post comments on the blog
- Creating a blog is often referred to as "blogging."
- Blogs are either hosted by a third-party site such as WordPress

FITNESS TOGETHER

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BLOG

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Giving the Gift of Fitness: How to Do it Right

Dec 8, 2022

You love how working out and eating in a way that makes sense for your body makes you feel – and it makes sense that you'd want the people you love to enjoy the same benefits of a healthy lifestyle. Giving the gift of fitness makes sense, but it can be tough to figure out how to give your loved ones fitness and nutrition-oriented gifts without sending the wrong message.

READ MORE

Fresh Fall Fitness Trends To Keep Your Body Guessing

Oct 14, 2022

Fall is the perfect time to establish some new healthy habits.

Switching up your fitness routine is key in keeping your body challenged and keeping your mind engaged in exercise. If you're not already doing so, working with a personal trainer is a smart way to keep your body guessing.

READ MORE

Blog Types and Blog Examples to Inspire You | Constant Contact

Visit >

Wikis

- A **wiki** is a web application
- It allows a user to easily add and edit content on a web page.
- The term wiki derives from the "wiki wiki"
- The most well-known wiki is Wikipedia
- It is an online encyclopedia
- It contains more than 52 million articles in over 300 different languages on a variety of topics.
- Wikinews, a free content news source
- Wikibooks, a collection of free textbooks and manuals

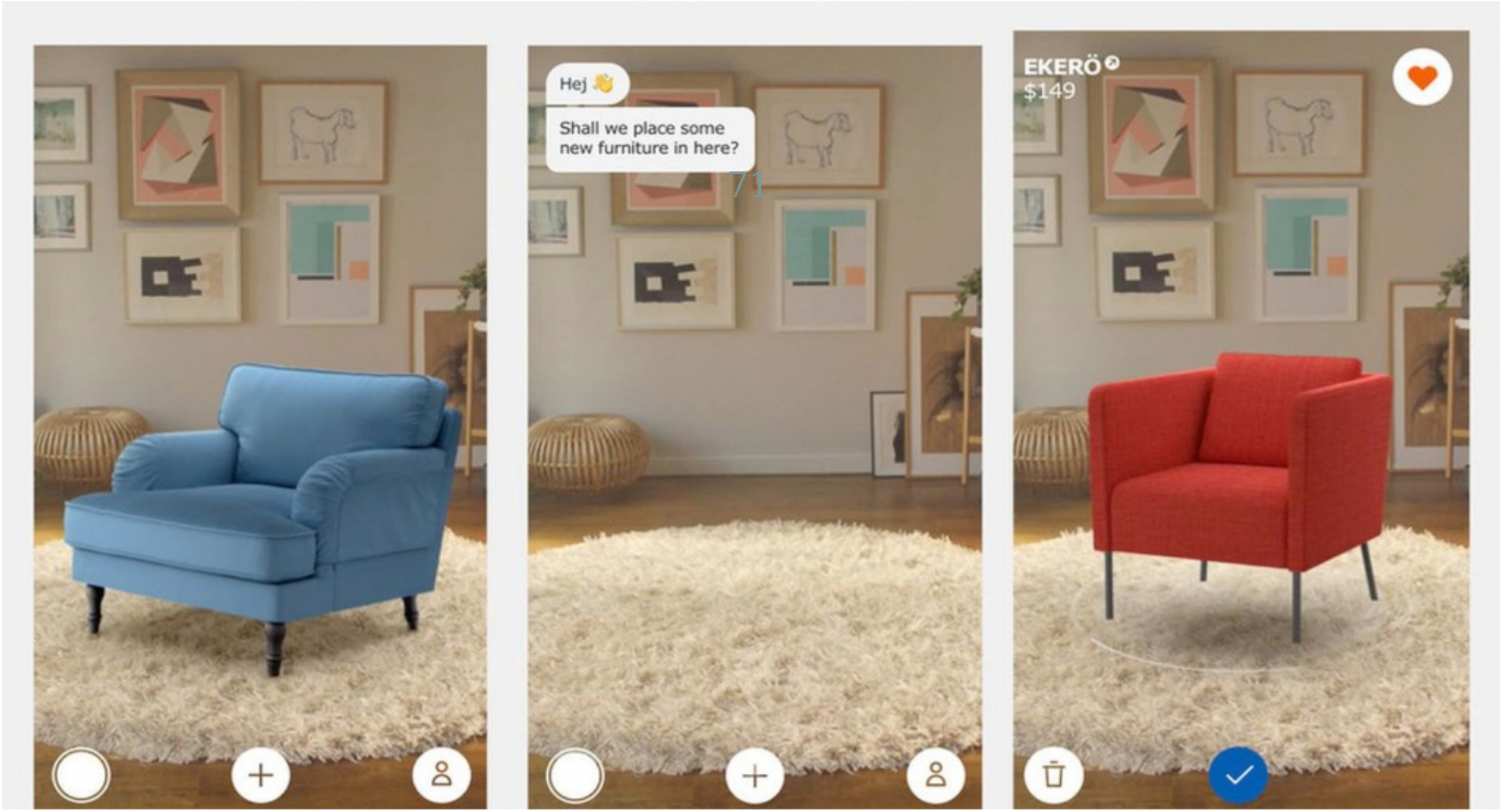
Virtual Reality

- **VR** involves fully immersing users within a virtual world
- It allow users to feel as if they are actually present within the virtual world.
- Higher-end VR devices designed for gaming systems
- Sony's PlayStation VR , Samsung's Gear VR , Google Cardboard are examples of lower-cost, mobile, entry-level devices.

Virtual Reality

Augmented Reality

- **It** involves overlaying virtual objects over the real world, via smartphones, tablets, or HMDs.
- Nintendo's Pokémon Go game uses AR
- Ikea's Place app permits users to scan a room in their homes with their smartphones
- select a piece of furniture online, and see how it will look in their room.



Taking images and placing them on other images is not a revolutionary development: this has essentially been around since the earliest days of software packages like Adobe Photoshop. What is different here is how IKEA is using new tech to improve that experience for users.

Mixed reality (MR)

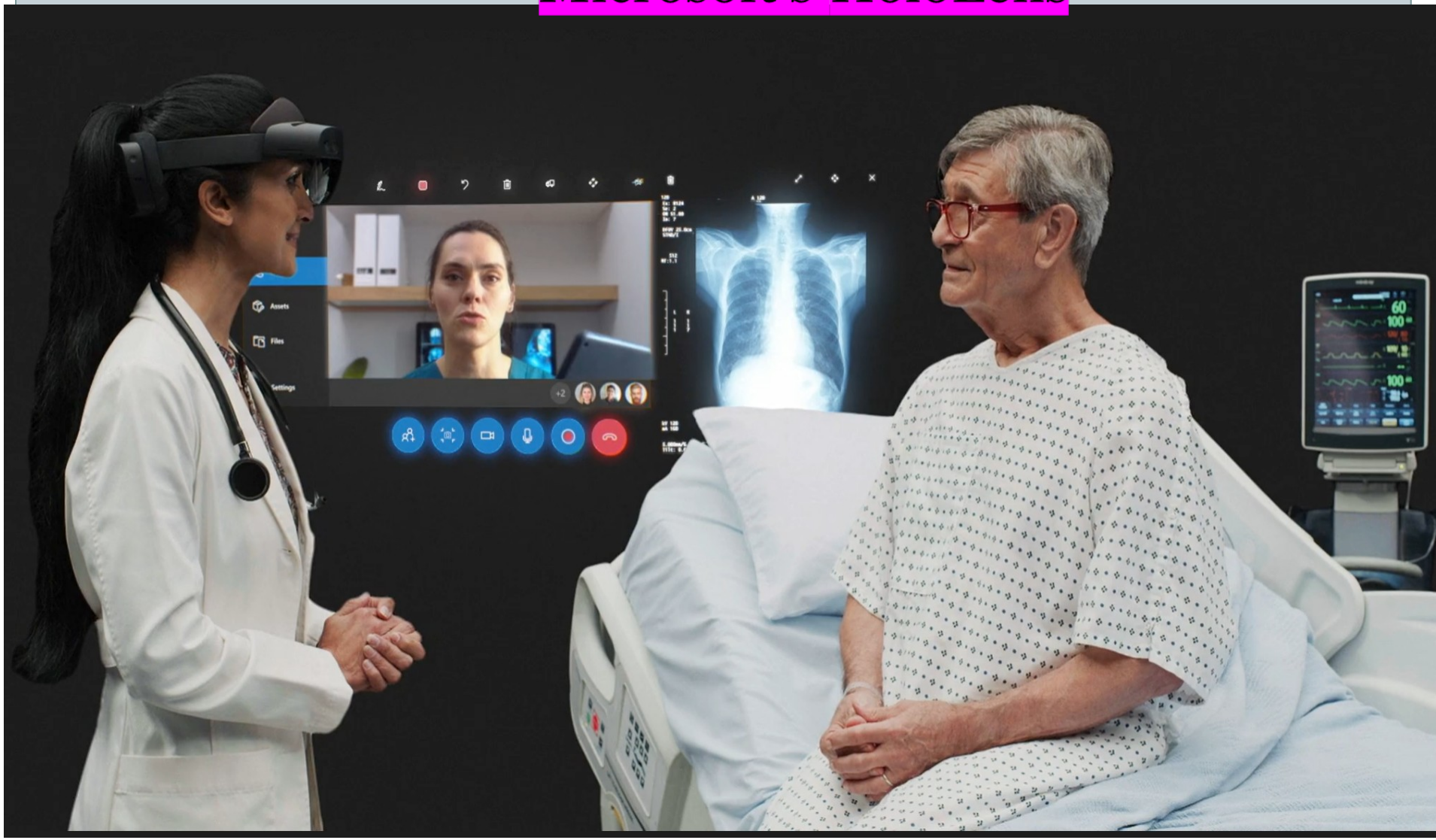
- It is an enhanced version of AR in which virtual images can interact with the real environments onto which they are overlaid.
- Remote collaboration and training to creating immersive gaming experiences and designing new products

Examples of devices created to enable mixed reality.

- Magic Leap One MR headset
- Microsoft's HoloLens

A video of a doctor in a room with a patient while using HoloLens to speak to a colleague over Teams and display an x-ray in mixed reality

Microsoft's HoloLens



Magic Leap One MR headset

Intelligent Digital Assistants

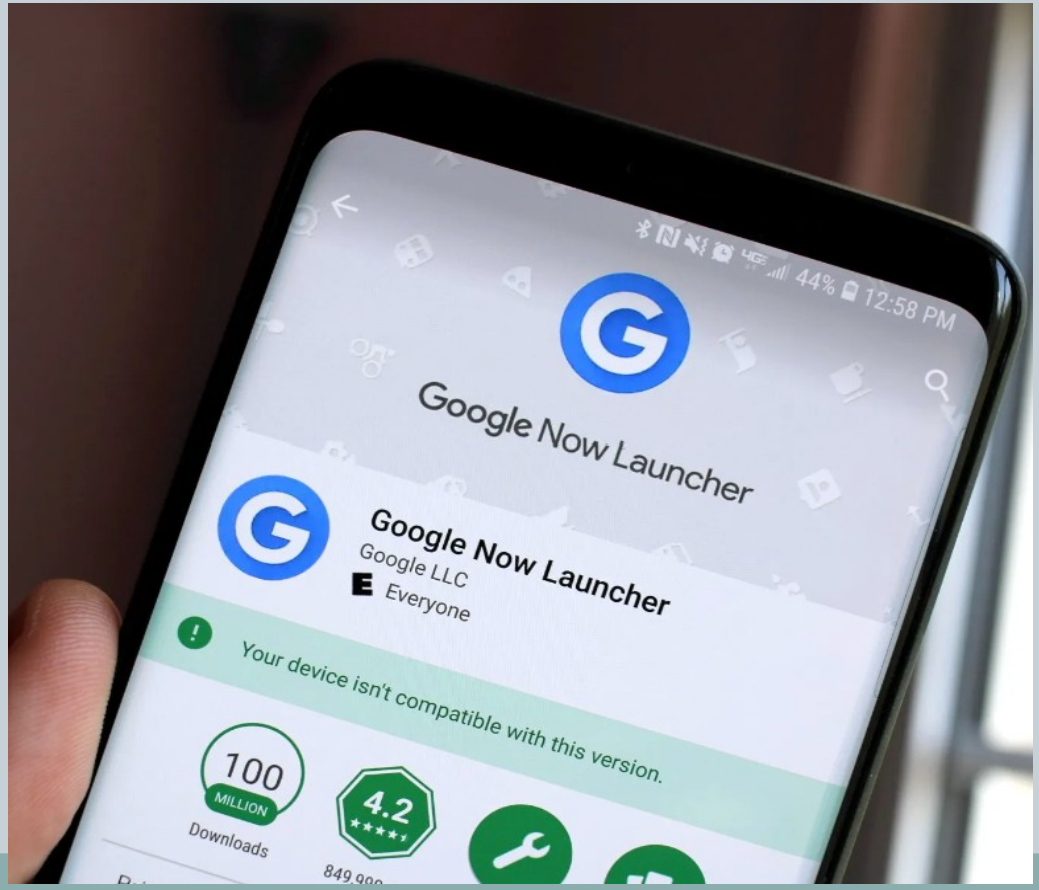
- Digital assistant pulls data from multiple sources and puts it into context
- Having a conversation with a computer, having it understand you and be able to carry out tasks according to your direction
- Hollywood movie *2001* science fiction Movie 1968 : *A Space Odyssey*, to the first *Star Wars* film, used their AI capabilities.

https://www.youtube.com/watch?v=oR_e9y-bka0

Intelligent Digital Assistants: Apple's Siri

- Apple's Siri, billed as an intelligent personal assistant and knowledge navigator and released in 2011
- Siri has a natural-language, conversational interface, situational awareness, and is capable of carrying out many tasks
- Apple finally released its own HomePod voice-activated speaker in 2017.

- In 2012, Google released Google Now, its version of an intelligent digital assistant for Android-based smartphones



Alexa

- In 2015, Amazon launched the Amazon Echo, a voice-controlled home speaker equipped with underlying AI

Mobile Apps: The Next Big Thing Is Here

- Mobile applications, commonly known as "apps,"
- They are software programs designed to run on mobile devices like smartphones and tablets.
- They are essential tools for both individuals and businesses.

Significance of Mobile Applications

In today's digital age, mobile apps have become an **integral part of our daily lives**. They offer

convenience

accessibility

personalization

Types of Mobile Applications: Three primary types

1. **Native Apps**
2. **Web Apps**
3. **Hybrid Apps**

Types of Mobile Applications: Native & Web Apps

Native Apps: Designed for a specific platform (e.g., iOS, Android),

They offer the best performance and user experience.

Ex: Whatsapp, Instagram

Web Apps: Accessed through a web browser

They don't require installation

They have limited capabilities.

Ex: Twitter, Gmail

Types of Mobile Applications: Hybrid Apps

A combination of native and web apps

They provide a balance between performance and versatility.

Ex: Uber, Facebook, Netflix

App Distribution:

- App stores, such as the **Apple App Store and Google Play Store**
- making them central to the app ecosystem.
- They play a crucial role in distributing and promoting mobile applications.

Users can discover

download

update apps from these stores

Current Mobile App Trends

1. AI and Machine Learning Integration
2. Augmented Reality (AR) and Virtual Reality (VR)

Current Mobile App Trends

AI and Machine Learning Integration:

- Mobile apps are increasingly using AI and machine learning to personalize user experiences
- They offer recommendations, and automate tasks.
- Virtual assistants, chatbots, and AI-powered content curation are becoming more common.

HOW AN AI CHATBOTS WORKS

Chatbot vs Intelligent Virtual Agent

Chatbot responds using pre-registered workflows and answers.

IVA is a little bit smarter than a chatbot. IVA uses natural language processing to simulate human conversations.

Ten tasks for a virtual assistant

- Add events to a calendar
- Add items to to-do lists
- Control smart home devices
- Make and receive phone calls
- Create text messages
- Get directions
- Hear news and weather reports
- Find hotels or restaurants
- Check flight status
- Request songs

Current Mobile App Trends

Augmented Reality (AR) and Virtual Reality (VR):

- AR and VR technologies are being integrated into mobile apps
- They offer immersive experiences in gaming, education, retail, and more.
- AR apps are used for marketing, navigation, and enhancing real-world experiences.

Current Mobile App Trends

VS

AUGMENTED REALITY

- Overlays computer generated 3D content on the real world
- User is able to interact with real world and virtual world
- User can clearly distinguish between both the worlds.
- It is achieved by smartphones, tablets or AR wearables.

VIRTUAL REALITY

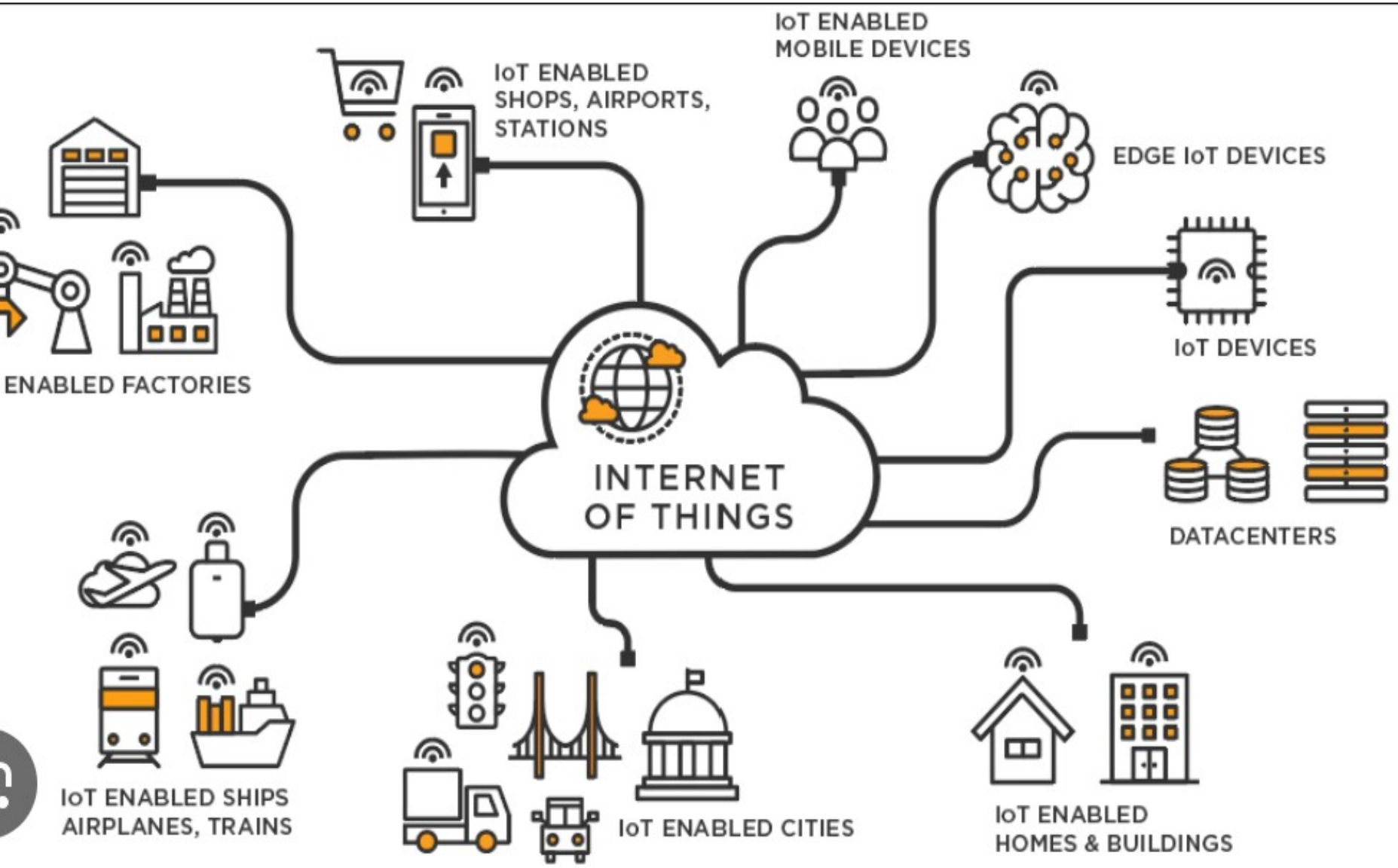
- Visually immerse the user with simulated objects and environment.
- Completely shut down the real world and make user think that they are really in the virtual world.
- User finds it hard to differentiate between virtual and real world.
- It is achieved by VR headsets.

Current Mobile App Trends

IoT (Internet of Things) Integration:

1. Apps are connecting with IoT devices
2. It allow users to control and monitor smart home appliances, wearables, and other IoT gadgets from their mobile devices.

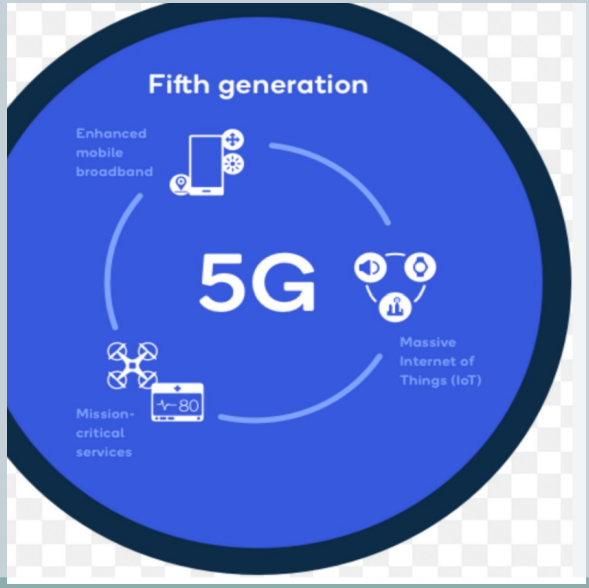
Current Mobile App Trends



Current Mobile App Trends

G-Enabled Apps:

1. With the rollout of 5G networks,
2. mobile apps are benefiting from increased speed and bandwidth.
3. This is leading to improved real-time streaming, augmented reality experiences, and faster downloads.



Current Mobile App Trends

Health and Wellness Apps:

Health and fitness apps have gained significant popularity

They offer features like :

1. **activity tracking**
2. **remote healthcare consultations**
3. **mental health support.**

Current Mobile App Trends

MyFitnessPal

Headspace

The 7 Minute Workout

Freeletics

Fooducate

Glo

Sworkit

Pear Personal Fitness

Strava

JEFIT

E-commerce and Mobile Payments

Mobile shopping apps continue to grow features include:

1. one-click payments
2. social commerce integrations.
3. Contactless mobile payments
4. Digital wallets are on the rise, simplifying transactions.

Privacy and Data Protection

- Mobile app security is a critical aspect of app development and usage
- User privacy and data protection have become paramount
- apps focusing on:
  A. transparent data handling
  B. consent management
  C. privacy controls.

Key Considerations And Practices Related To Mobile App Security

Data Encryption:

- Use encryption to protect data at rest and data in transit.
- Implement secure protocols like HTTPS for network communications.

Secure Authentication:

- Ensure robust user authentication mechanisms.
- Use strong password policies
- multi-factor authentication
- biometric authentication where possible.

Key Considerations And Practices Related To Mobile App Security

Code Review and Penetration Testing:

- Regularly review app code for security vulnerabilities.
- Conduct penetration testing to identify and address potential weaknesses.

Secure Data Storage:

- Store sensitive data securely
- utilize encryption and other safeguards to protect against data breaches.

Key Considerations And Practices Related To Mobile App Security

Authorization and Permissions:

- Implement proper authorization controls
- ensure that users can only access the data and features they are allowed to.

Key Considerations And Practices Related To Mobile App Security

Regular Updates:

- Keep the app and its dependencies up to date with security patches and updates to protect against known vulnerabilities.

Secure File Handling:

- Safeguard against unauthorized access to local and remote files, and avoid hardcoding sensitive information in files.

Key Considerations And Practices Related To Mobile App Security

Secure Communication:

- Protect data during transmission.
- Avoid using insecure protocols
- implement secure communication channels.

Secure Payment Processing: -

If your app handles financial transactions follow PCI DSS (Payment Card Industry Data Security Standard) standards for secure payment processing store sensitive financial data securely.